

8 10/100TX with X ring

Web management industrial switch

User Manual



Notice

This manual contents are based on the below table listing software kernel version, hardware version, and firmware version. If your switch functions have any different from the manual contents description, please contact your local sale dealer for more information.

Firmware Version	V2.01
Kernel Version	V3.08
Hardware Version	A5.00

FCC Warning

This Equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

CE Mark Warning

This is a class A product. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.

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Introduction

The 8 10/100TX with X-ring Web management industrial switch is a cost-effective solution and meets the high reliability requirements demanded by industrial applications. The 8 10/100TX with redundant ring Web management industrial switch can be easily managed through the Web GUI. It also provides the redundant ring function that can prevent the network connection failure.

Features

- 8-port 10/100TX industrial switch
- Conforms to IEEE 802.3 10Base-T, 802.3u 100Base-TX/100Base-FX
- RJ-45 port support auto MDI/MDI-X function
- Wide-range redundant power design
- DIN rail and wall mount design
- Easy configuration design
- Store-and-Forward switching architecture
- Web management
- Support IEEE 802.1p class of service and provide port base, Tag base and Type of service priority method.
- Per port supports 4 priority queues
- Support Port based VLAN / 802.1 Q Tag VLAN
- Support IGMP with Query mode for multi media application
- Support DHCP client
- Supports ingress packet filter and egress rate limit.
- Support Relay alarm output for system events
- Support Power polarity reverse protect
- Support Port mirror for TX only, TX and RX packet
- IEEE 802.3x flow control support
 - Flow control on full-duplex
 - Back pressure on half-duplex

- Support Super ring function
- Support SNTP
- Support TFTP firmware update and system configuration restore and backup
- 1Mbits Embedded memory
- 2K MAC address table

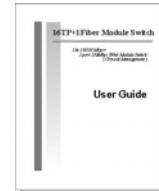
Package Contents

Please refer to the package content list below to verify them against the checklist.

- 8 10/100TX with redundant ring Web management industrial switch
- One DIN-Rail (attached on the switch)
- One wall mount plate and six screws
- User manual



8 10/100TX with X-ring Web management industrial switch



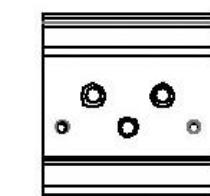
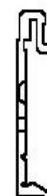
User Manual



Wall Mount Plate(Option)



Screws



DIN-Rail

Compare the contents of your industrial switch with the standard checklist above. If any item is damaged or missing, please contact your local dealer for service.

Hardware Description

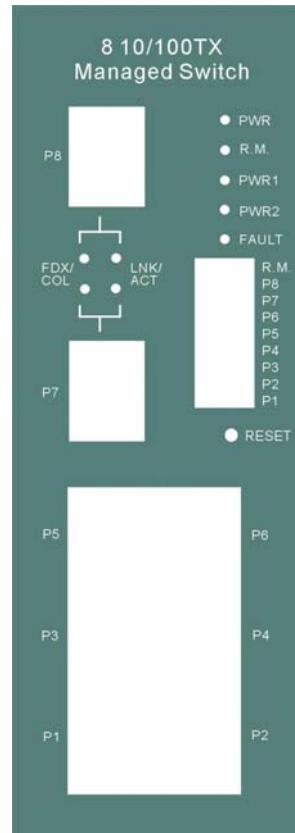
In this paragraph, we will introduce the Industrial switch's hardware spec, port, cabling information, and wiring installation.

Physical Dimension

8 10/100TX with redundant ring Web management industrial switch dimension (W x H x D) is **54mm x 135mm x 105mm**

Front Panel

The Front Panel of the 8 10/100TX with redundant ring Web management industrial switch is showed as following figure.



Front Panel of the industrial switch

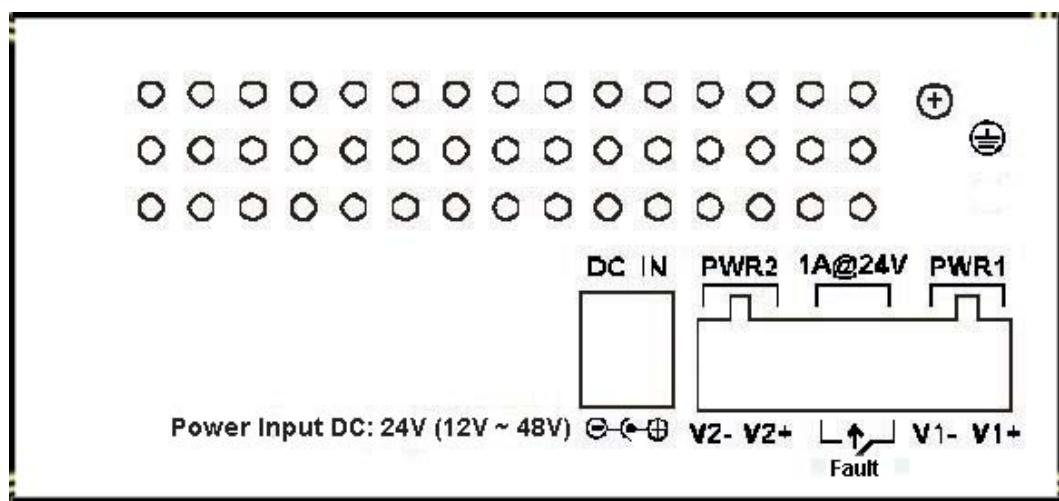
Reset Button

The reset button provides user a quick and easy way to restart and set the configuration back to default value.

- **Restart:** press the button for 2 seconds and release.
- **Set to factory default value:** press the button for 5 seconds and release. The switch will set all configurations back to default setting.

Bottom View

The bottom panel of the 8 10/100TX with redundant ring Web management industrial switch consists one terminal block connector within two DC power inputs and one DC IN power jack.



Bottom Panel of the industrial switch

DIP-switch

The switch provides the 9 DIP-switch for configuring the relay alarm operation mode and the ring master operation mode. The default value of Dipswitch is **OFF**.

DIP Switch No	Status	Description
1	OFF	Disable port 1 Alarm
	ON	Enable port 1 Alarm. If the port's link fails, the fault LED will light up.
2	OFF	Disable port2 Alarm
	ON	Enable port 2 Alarm. If the port's link fails, the fault LED will light up.
3	OFF	Disable port3 Alarm
	ON	Enable port3 t Alarm. If the port's link fails, the fault LED will light up.
4	OFF	Disable port4 Alarm
	ON	Enable port4 Alarm. If the port's link fails, the fault LED will light up.
5	OFF	Disable port 5 Alarm
	ON	Enable port5 Alarm. If the port's link fails, the fault LED will light up.
6	OFF	Disable port 6 Alarm
	ON	Enable port6 Alarm. If the port's link fails, the fault LED will light up.
7	OFF	Disable port 7 Alarm
	ON	Enable port 7 Alarm. If the port's link fails, the fault LED will light up.

8	OFF	Disable port8 Alarm
	ON	Enable port8 Alarm. If the port's link fails, the fault LED will light up.
9	OFF	Disable the ring master function.
	ON	Enable the switch as the ring master in the X-ring group.

[NOTE]

1. When port alarm function is enabled, the fault LED will on and Alarm relay will activity when port failure occurs.
2. Please restart the switch after the Redundant ring DIPswitch is set.

LED Indicators

There are 7 diagnostic LEDs located on the front panel of the industrial switch. They provide real-time information of system and optional status. The following table provides description of the LED status and their meanings for the switch.

LED	Status	Meaning
Power	Green	The switch unit is power on.
	Off	The switch unit is no power input.
Power 1	Green	Power on
	Off	No power inputs
Power 2	Green	Power on
	Off	No power inputs

Fault	Yellow	Power failure or UTP port failure or Fiber port failure
	Off	No Power failure or UTP port failure or Fiber port failure occurs
R. M. (Ring Master)	Green	The industrial switch is the master of X-ring group.
	Off	The industrial switch is not a ring master in X-ring group.
LNK/ACT (Port 7 & 8)	Green	The port is linking.
	Blinks	The port is transmitting or receiving packets from the TX device.
	Off	No device attached
FDX/COL (Port 7 & 8)	Yellow	The port is operating in full-duplex mode.
	Blinks	Collision of Packets occurs in the port.
	Off	The port in half-duplex mode or no device attached

Ports

- **RJ-45 ports**

There are 8x 10/100Mbps auto-sensing ports for 10Base-T or 100Base-TX devices connection. The UTP ports will auto-sense for 10Base-T or 100Base-TX connections. Auto MDI/MDIX means that you can connect to another switch or workstation without changing straight through or crossover cabling. See the below figures for straight through and crossover cable schematic.

■ RJ-45 Pin Assignments

Pin Number	Assignment
1	Tx+
2	Tx-
3	Rx+
6	Rx-

[NOTE] “+” and “-” signs represent the polarity of the wires that make up each wire pair.

All ports on this industrial switch support automatic MDI/MDI-X operation, you can use straight-through cables (See Figure below) for all network connections to PCs or servers, or to other switches or hubs. In straight-through cable, pins 1, 2, 3, and 6, at one end of the cable, are connected straight through to pins 1, 2, 3 and 6 at the other end of the cable. The table below shows the 10BASE-T/100BASE-TX MDI and MDI-X port pin outs.

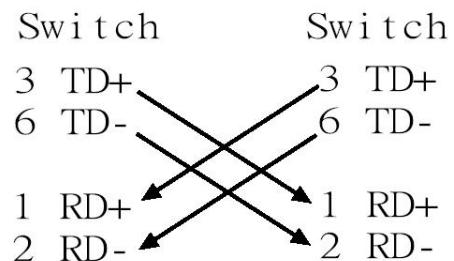
Pin MDI-X	Signal Name	MDI Signal Name
1	Receive Data plus (RD+)	Transmit Data plus (TD+)
2	Receive Data minus (RD-)	Transmit Data minus (TD-)
3	Transmit Data plus (TD+)	Receive Data plus (RD+)
6	Transmit Data minus (TD-)	Receive Data minus (RD-)

Switch Router or PC

3 TD+ —————→ 3 RD+
6 TD- —————→ 6 RD-

1 RD+ ←———— 1 TD+
2 RD- ←———— 2 TD-

Straight Through Cable Schematic



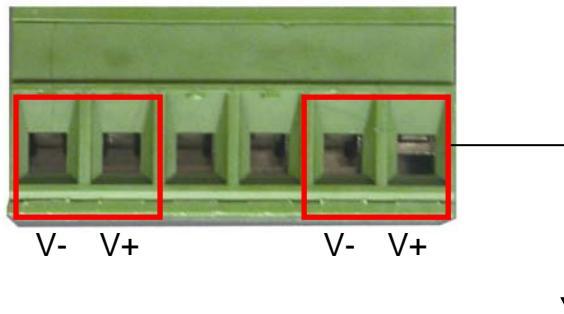
Cross Over Cable Schematic

Cabling

Use the four twisted-pair, Category 5 cabling for RJ-45 port connection. The cable between the converter and the link partner (switch, hub, workstation, etc.) must be less than 100 meters (328 ft.) long.

Wiring the Power Inputs

Please follow below steps to insert the power wire.



1. Insert the positive and negative wires into the V+ and V- connector on the terminal block connector.

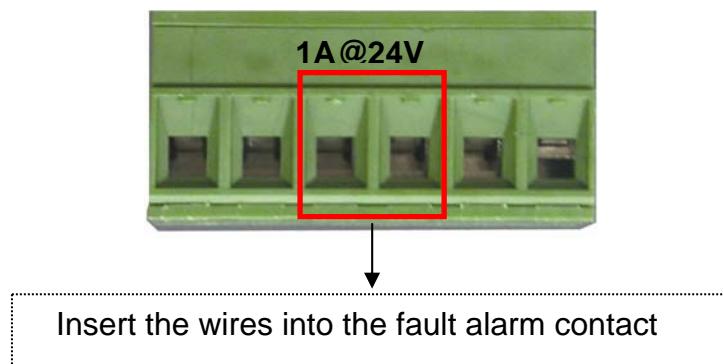


2. To tighten the wire-clamp screws for preventing the DC wires to loose.

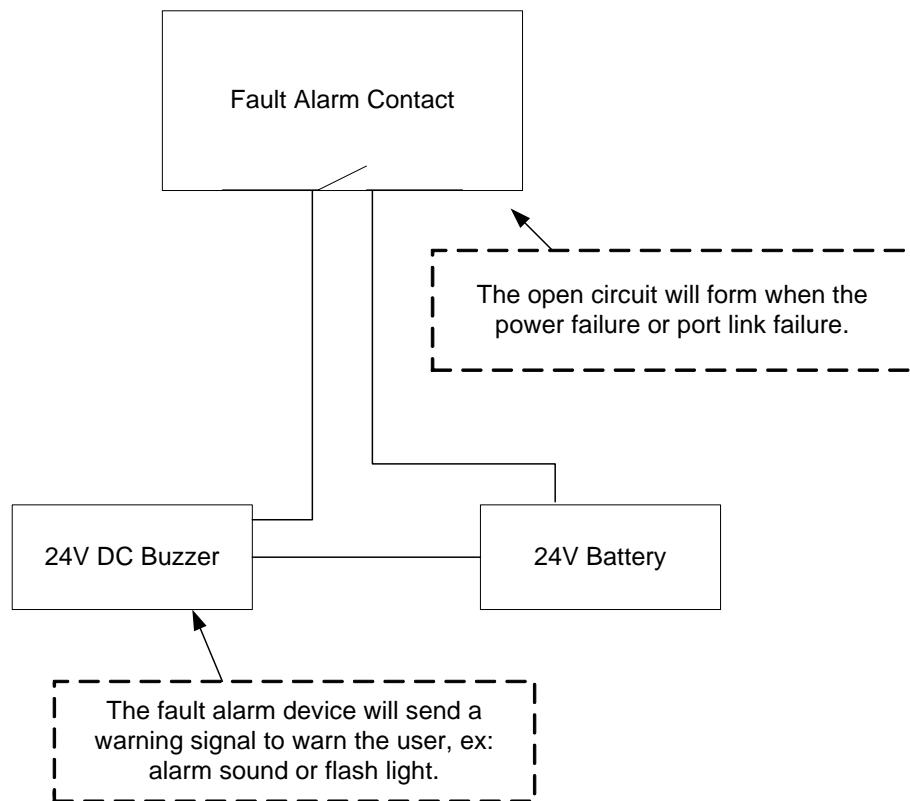
[NOTE] The wire range of terminal block is from 12~ 24 AWG.

Wiring the Fault Alarm Contact

The fault alarm contact is in the middle of terminal block connector as below figure shows. By inserting the wires and set the DIPswitch at “ON” status, it will detect when power is failure or port link failure and form an open circuit. And, the following figure shows an application example for the fault alarm contact.



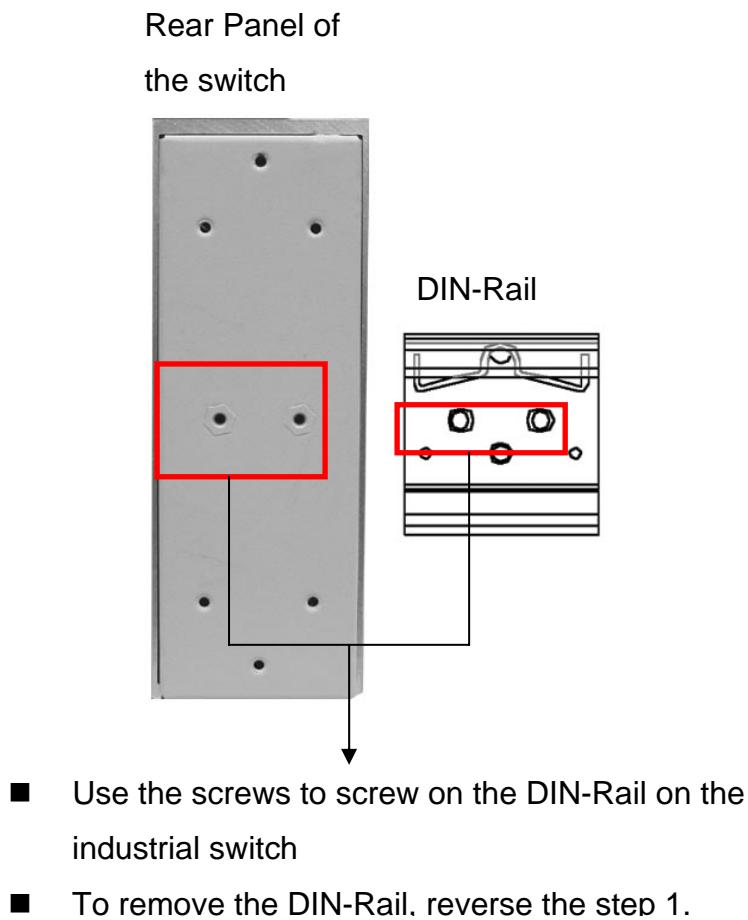
[NOTE] The wire range of terminal block is from 12~ 24 AWG.



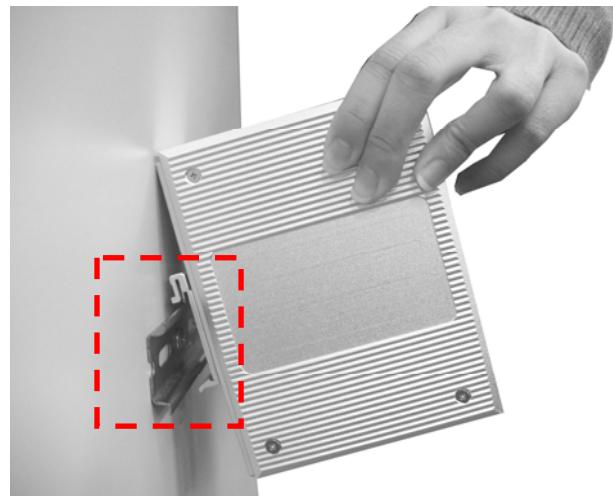
Mounting Installation

DIN-Rail Mounting

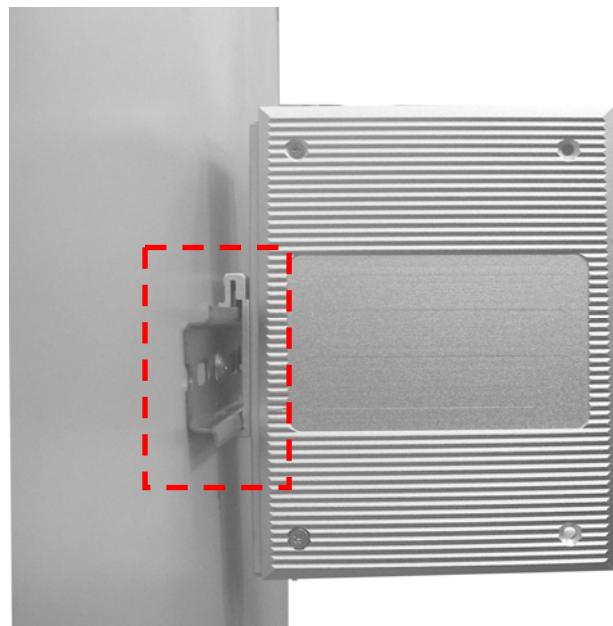
The DIN-Rail is screwed on the industrial switch when out of factory. If the DIN-Rail is not screwed on the industrial switch, please see the following figure to screw the DIN-Rail on the switch. Follow the below steps to hang the industrial switch.



1. First, insert the top of DIN-Rail into the track.



2. Then, lightly push the DIN-Rail into the track.

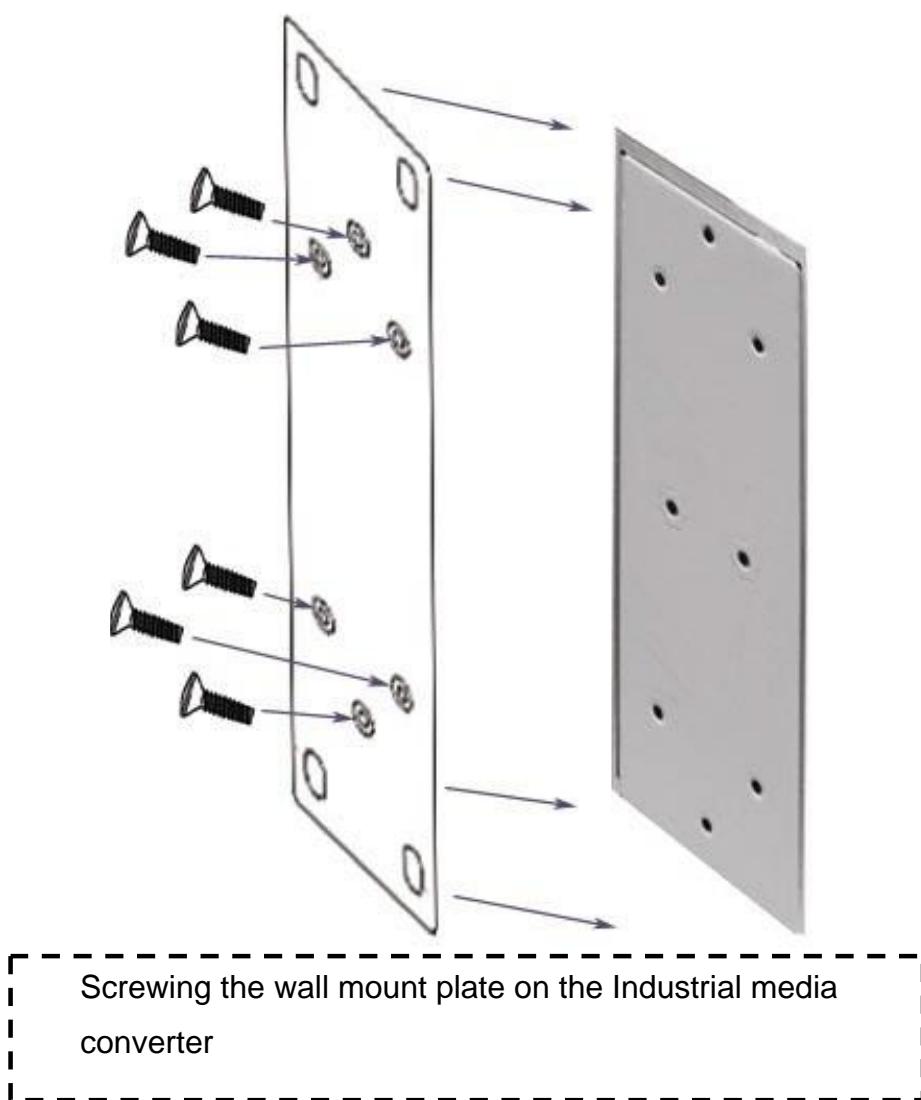


3. Check the DIN-Rail is tightly on the track.
4. To remove the industrial switch from the track, reverse steps above.

Wall Mount Plate Mounting(Option)

Follow the below steps to mount the industrial switch with wall mount plate.

1. Remove the DIN-Rail from the industrial switch; loose the screws to remove the DIN-Rail.
2. Place the wall mount plate on the rear panel of the industrial switch.
3. Use the screws to screw the wall mount plate on the industrial switch.
4. Use the hook holes at the corners of the wall mount plate to hang the industrial switch on the wall.
5. To remove the wall mount plate, reverse steps above.



Hardware Installation

In this paragraph, we will describe how to install the 8 10/100TX with redundant ring Web management industrial switch and the installation points for attention.

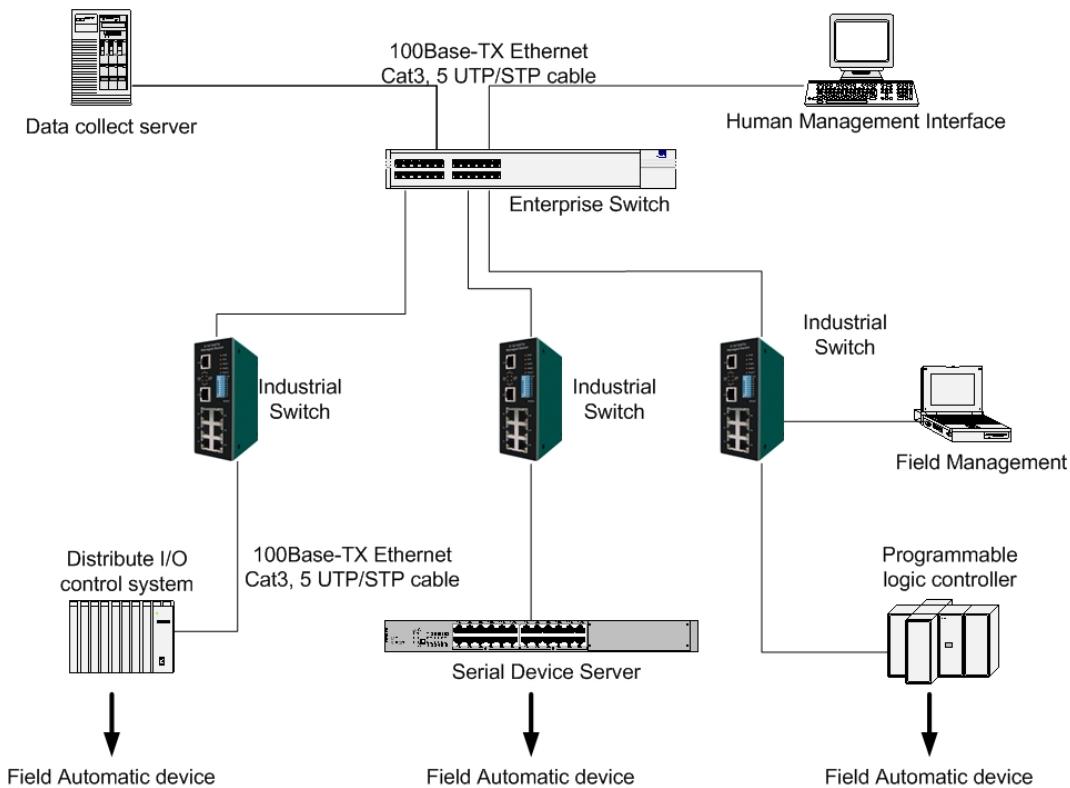
1. Unpacked the Industrial switch.
2. Check the DIN-Rail is screwed on the Industrial switch. If the DIN-Rail is not screwed on the Industrial switch. Please refer to **DIN-Rail Mounting** section for DIN-Rail installation. If you want to wall mount the Industrial switch, then please refer to **Wall Mount Plate Mounting** section for wall mount plate installation.
3. To hang the Industrial switch on the DIN-Rail track or wall, please refer to the **Mounting Installation** section.
4. Power on the Industrial switch. How to wire the power; please refer to the **Wiring the Power Inputs** section. The power LED on the Industrial switch will light up. Please refer to the **LED Indicators** section for meaning of LED lights.
5. Prepare the twisted-pair, straight through Category 5 cable for Ethernet connection.
6. Insert one side of Category 5 cables into the Industrial switch Ethernet port (RJ-45 port) and another side of category 5 cables to the network devices' Ethernet port (RJ-45 port), ex: switch, PC or Server. The UTP port (RJ-45) LED on the Industrial switch will light up when the cable connected with the network device. Please refer to the **LED Indicators** section for LED light meaning.

[NOTE] Be sure the connected network devices support MDI/MDI-X. If it does not support then use the crossover category 5 cable.

7. When all connections are all set and LED lights all show in normal, the installation is complete.

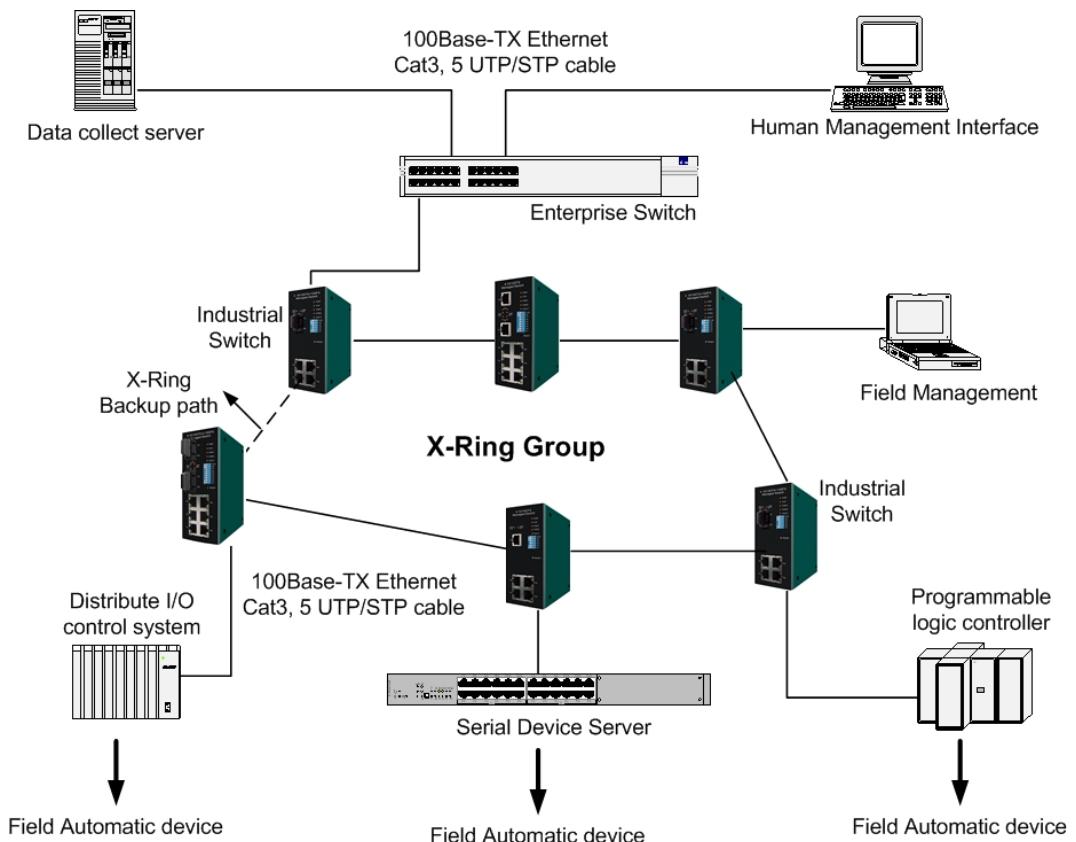
Network Application

This chapter provides some sample applications to help user to have more actual idea of industrial switch function application. The following figure is a sample application of the industrial switch.



X-ring Application

The industrial switch supports the redundant ring protocol that can help your network system to recovery from network connection failure within 300ms or less, and make your network system more reliable. The X-ring algorithm is like as spanning tree protocol (STP) algorithm but it has faster recovery time than STP. The following figure is a sample X-ring application.



Web-Based Management

This section introduces the configuration and functions of the Web-Based management. The following configuration steps are based on the firmware version 2.01.

About Web-based Management

Inside the CPU board of the switch exists an embedded HTML web site residing in flash memory. It offers advanced management features and allow users to manage the switch from anywhere on the network through a standard browser such as Microsoft Internet Explorer.

The Web-Based Management supports Internet Explorer 5.0. It is based on Java Applets with an aim to reduce network bandwidth consumption, enhance access speed and present an easy viewing screen.

[NOTE] By default, IE5.0 or later version does not allow Java Applets to open sockets. The user has to explicitly modify the browser setting to enable Java Applets to use network ports.

Preparing for Web Management

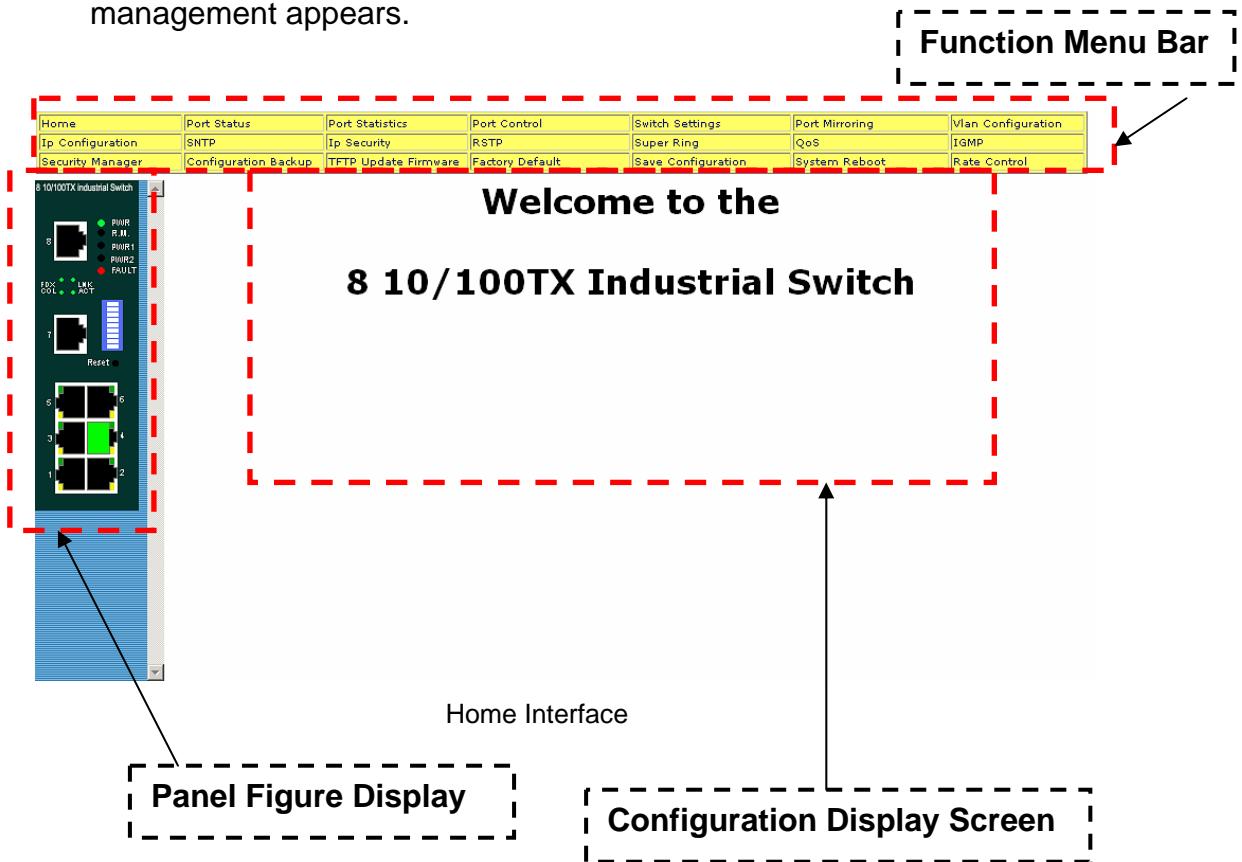
Before to use web management, install the industrial switch on your network and make sure that any one of PC on your network can connect with the industrial switch through the web browser. The industrial switch default value of IP, subnet mask, username and password is as below:

- IP Address: **192.168.16.1**
- Subnet Mask: **255.255.255.0**

- Default Gateway: **192.168.16.254**
- User Name: **root**
- Password: **root**

System Login

1. Launch the Internet Explorer on the PC.
2. Type http:// and the IP address of the switch. Press “**Enter**”.
3. The login screen appears.
4. Key in the user name and password. The default user name and password is “**root**”.
5. Click “**Enter**” or “**OK**”, then the home screen of the Web-based management appears.



Port status

In Port status, you can view every port status that depended on user's setting and the negotiation result.

- **Port:** the port number.
- **Type:** the speed mode, ex: 100TX = 100Mbps.
- **Link:** "Down" is "No Link". "UP" is "Link".
- **State:** display port statuses "disable" or "enable". "Unlink" will be treated as "off".
- **Negotiation:** display the auto negotiation mode: auto/force. "Config" means the value that user configured. "Actual" means the current value of the port.
- **Speed Duplex:** display port connection speed. "Config" means the value that user configured. "Actual" means the current value of the port.
- **Flow Control:** Full: display the flow control status is "enable" or "disable" in full mode. "Config" means the value that user configured. "Actual" means the current value of the port.

Port Status								
Port	Type	Link	State	Negotiation	Speed Duplex		Flow Control	
					Config	Actual	Config	Actual
Port.01	100TX	Down	Enable	Auto	100 Full	N/A	Symmetric	N/A
Port.02	100TX	Down	Enable	Auto	100 Full	N/A	Symmetric	N/A
Port.03	100TX	Down	Enable	Auto	100 Full	N/A	Symmetric	N/A
Port.04	100TX	Up	Enable	Auto	100 Full	100 Full	Symmetric	ON
Port.05	100TX	Down	Enable	Auto	100 Full	N/A	Symmetric	N/A
Port.06	100TX	Down	Enable	Auto	100 Full	N/A	Symmetric	N/A
Port.07	100TX	Down	Enable	Auto	100 Full	N/A	Symmetric	N/A
Port.08	100TX	Down	Enable	Auto	100 Full	N/A	Symmetric	N/A

Port Status interface

Single Port Information

You can click the port on the Panel figure on the left side of web GUI. Then, the single port information window will pop up and display the port current status information.

http://192.168.16.1 - Port 2 Status ...

Port	2
Link	Up
State	On
Tx Good Packet	3749
Tx Bad Packet	0
Rx Good Packet	22586
Rx Bad Packet	0
Tx Abort Packet	0
Packet Collision	0

Port information interface

Port Statistics

The following information provides a view of the current port statistic information. Click  button to clean all counts.

Port Statistics

Port	Type	Link	State	Tx Good Packet	Tx Bad Packet	Rx Good Packet	Rx Bad Packet	Tx Abort Packet	Packet Collision
Port.01	100TX	Down	Enable	0	0	0	0	0	0
Port.02	100TX	Down	Enable	0	0	0	0	0	0
Port.03	100TX	Down	Enable	0	0	0	0	0	0
Port.04	100TX	Up	Enable	1304	0	4859	0	0	0
Port.05	100TX	Down	Enable	0	0	0	0	0	0
Port.06	100TX	Down	Enable	0	0	0	0	0	0
Port.07	100TX	Down	Enable	0	0	0	0	0	0
Port.08	100TX	Down	Enable	0	0	0	0	0	0

Port Statistics Interface

Port Controls

You can change the port status.

1. Select the port by scroll the **Port** column.
2. **State:** disable or enable control of his port.
3. **Negotiation:** you can set auto negotiation mode is Auto, Nway (specify the speed/duplex on this port and enable auto-negotiation), or Force.
4. **Speed:** set the speed of the port.
5. **Duplex:** set full-duplex or half-duplex mode of the port.
6. **Flow control:** set flow control function is **Symmetric** or **Asymmetric** in Full Duplex mode. The default value is **Disable**.
7. Click **Apply** button to apply all configuration.
8. When you select the port, you can see port current configure shows in below column.

[NOTE] Remember to execute the “Save Configuration” action, otherwise the new configuration will lose when the switch power off.

Port Controls

Port	State	Negotiation	Speed	Duplex	Flow Control
Port.01					
Port.02	Enable	Auto	100	Full	Symmetric
Port.03					
Port.04					

Apply **Help**

Port	Type	Link	State	Negotiation	Speed Duplex		Flow Control	
					Config	Actual	Config	Actual
Port.01	100TX	Down	Enable	Auto	100 Full	N/A	Symmetric	N/A

Port Control interface

Switch Settings

You can assign the system name and location and view the system information.

- **System Name:** assign the name of switch. The maximum length is 64 bytes.
- **System Location:** assign the switch physical location. The maximum length is 64 bytes.
- **System Description:** display the description of switch. Read only cannot be modified.
- **Firmware Version:** display the switch's firmware version.
- **Kernel Version:** display the kernel software version.
- **Hardware version:** display the switch hardware version.
- **MAC Address:** display the unique hardware address assigned by manufacturer (default)

Switch Settings

System Description	Industrial 8-port Web-Managed Ethernet Rail Switch								
System Name									
System Location									
System Contact									
<input type="button" value="Apply"/> <input type="button" value="Help"/>									
<table border="1"> <tr> <td>Firmware Version</td> <td>v2.01</td> </tr> <tr> <td>Kernel Version</td> <td>v3.08</td> </tr> <tr> <td>Hardware Version</td> <td>A5.00</td> </tr> <tr> <td>MAC Address</td> <td>0018A9000072</td> </tr> </table>		Firmware Version	v2.01	Kernel Version	v3.08	Hardware Version	A5.00	MAC Address	0018A9000072
Firmware Version	v2.01								
Kernel Version	v3.08								
Hardware Version	A5.00								
MAC Address	0018A9000072								

Switch settings interface

[NOTE] Remember to execute the “Save Configuration” action, otherwise the new configuration will lose when the switch power off.

Port Mirroring

The Port mirroring is a method for monitor traffic in switched networks. Traffic through ports can be monitored by one specific port. That is, traffic goes in or out monitored ports will be duplicated into mirror port.

1. **Port Mirroring Mode:** set mirror mode -- Disable, TX, and Both. The default is “Disable”.
2. **Analysis Port:** It means mirror port can be used to see all monitor port traffic. You can connect mirror port to LAN analyzer or Netxray.
3. **Monitor Port:** the ports you want to monitor. All monitor port traffic will be copied to mirror port. You can select max 7 monitor ports in the switch. User can choose which port want to monitor in only one mirror mode.

[NOTE]

1. If you want to disable the function, select the monitor mode as disable.
2. Remember to execute the “Save Configuration” action, otherwise the new configuration will lose when the switch power off.

Port Mirroring

Port Mirroring Mode :	Disable <input type="button" value="▼"/>
Analysis Port :	None <input type="button" value="▼"/>
Monitor Port	State
Port.01	<input type="checkbox"/>
Port.02	<input type="checkbox"/>
Port.03	<input type="checkbox"/>
Port.04	<input type="checkbox"/>
Port.05	<input type="checkbox"/>
Port.06	<input type="checkbox"/>
Port.07	<input type="checkbox"/>
Port.08	<input type="checkbox"/>

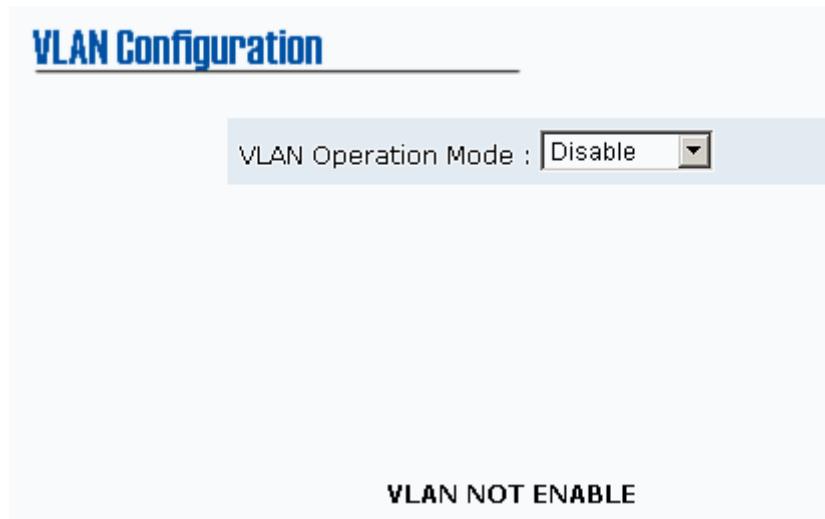
Prot Mirroring interface

VLAN configuration

A Virtual LAN (VLAN) is a logical network grouping that limits the broadcast

domain. It allows you to isolate network traffic so only members of the VLAN receive traffic from the same VLAN members. Basically, creating a VLAN from a switch is logically equivalent of reconnecting a group of network devices to another Layer 2 switch. However, all the network devices are still plug into the same switch physically.

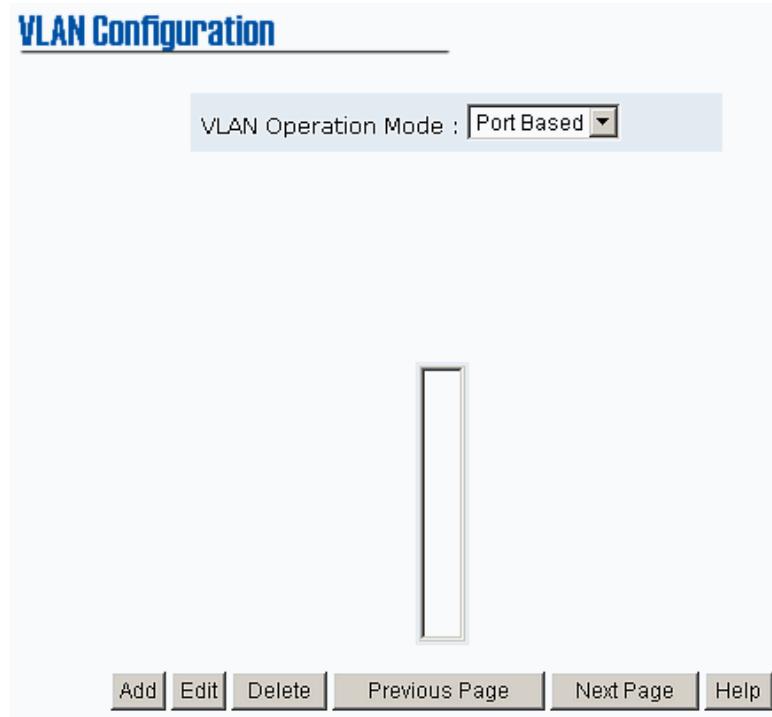
The industrial switch supports port-based and 802.1Q (tagged-based) VLAN. In the default configuration, VLAN operation mode default is “**Disable**”.



Port-based VLAN

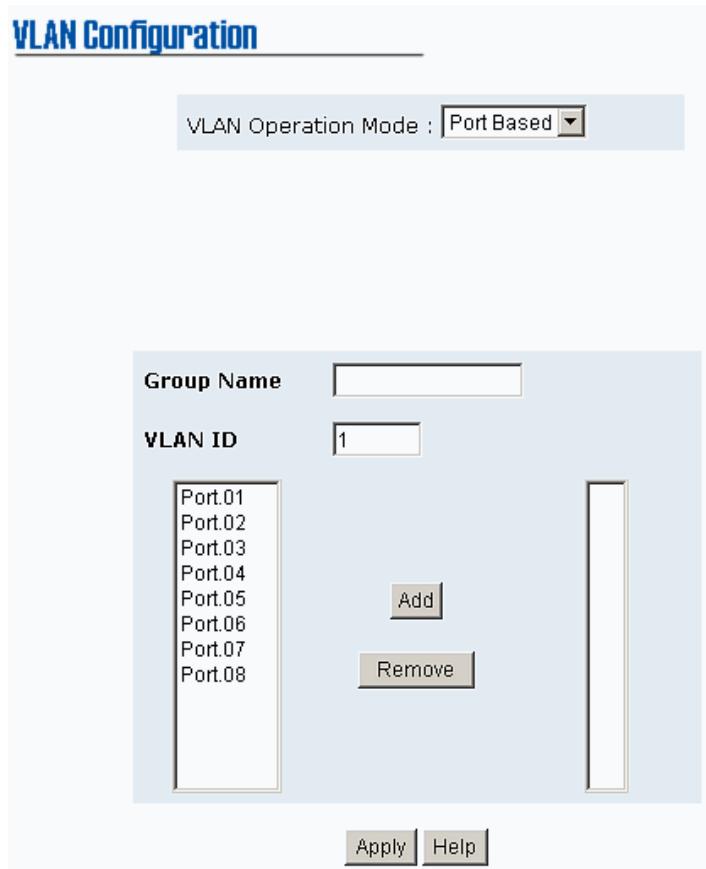
Packets can go among only members of the same VLAN group. Note all unselected ports are treated as belonging to another single VLAN. If the port-based VLAN enabled, the VLAN-tagging is ignored.

In order for an end station to send packets to different VLANs, it itself has to be either capable of tagging packets it sends with VLAN tags or attached to a VLAN-aware bridge that is capable of classifying and tagging the packet with different VLAN ID based on not only default PVID but also other information about the packet, such as the protocol.



VLAN – PortBase interface

1. Click **Add** to add a new VLAN group. The maximum VLAN group is up to 64 VLAN groups.
2. **Group Name:** assign the VLAN group name, ex: VLAN001.
3. **VLAN ID:** assign the VLAN ID (between 1-4094).
4. Select the members of VLAN group.
5. Click **Apply**.



VLAN—PortBase Add interface

6. You will see the VLAN group displays.
7. If the groups' list is over one page, you can click [Next Page](#) to view other VLAN groups.
8. Use [Delete](#) button to delete unwanted VLAN.
9. Use [Edit](#) button to modify existing VLAN group.

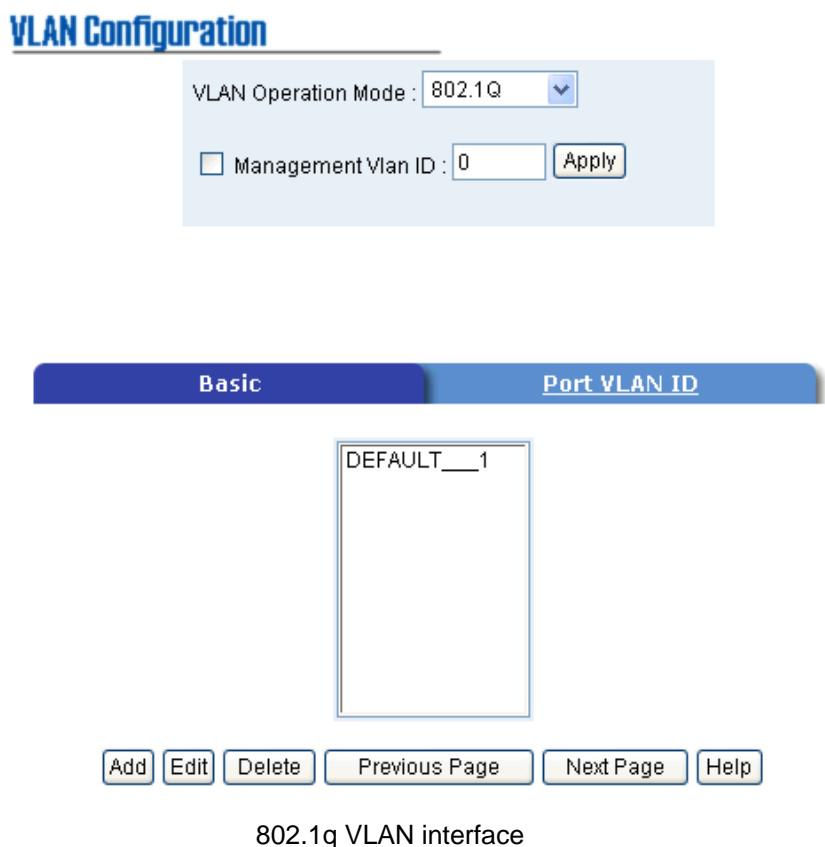
[NOTE] Remember to execute the “Save Configuration” action, otherwise the new configuration will lose when the switch power off.

802.1Q VLAN

Tagged-based VLAN is an IEEE 802.1Q specification standard. Therefore, it is possible to create a VLAN across devices from different switch vendors.

IEEE 802.1Q VLAN uses a technique to insert a “tag” into the Ethernet frames. Tag contains a VLAN Identifier (VID) that indicates the VLAN numbers.

You can create Tag-based VLAN. Enable 802.1Q VLAN, the all ports on the switch belong to default VLAN, VID is 1. The default VLAN can't be deleting. The maximum VLAN group is up to 64 VLAN groups.



■ Basic

1. Click **Add** button.
2. **Management VLAN ID:** it is used for remote management security. Only the port of VLAN group ID is equal to the Management VLAN ID can remote management that include telnet, SNMP, and Web browse the switch. Fill the specific VLAN ID number in Management VLAN ID column and mark the check box, and then click **Apply** button to enable the function. For example: the management VLAN ID is 101, the VLAN group ID 101 includes the port 1, 2, and 4. Therefore, only port 1,

2, and 4 can remote management the switch. And, if the port is in two different VLAN groups and one of VLAN group ID is equal to the assigned Management VLAN ID, it still has the right to remote management the switch.

3. **Group Name:** assign a name for the new VLAN.
4. **VLAN ID:** fill in a VLAN ID (between 2-4094). The default is 1.
5. From the Available ports box, select ports to add to the switch and click **Add** button.

VLAN Configuration

VLAN Operation Mode : 802.1Q

Management Vlan ID : 0

Basic **Port VLAN ID**

Group Name	<input type="text"/>
VLAN ID	1
Port.01 Port.02 Port.03 Port.04 Port.05	<input type="button" value="Add"/> <input type="button" value="Remove"/>

802.1q VLAN –Add interface

6. Click **Next**. Then you will see the page as follow.

VLAN Configuration

VLAN Operation Mode : 802.1Q

Management Vlan ID : 0

VLAN Name	VLAN002		
VLAN ID	2		
Untag Member			
Port.01	Untag <input type="button" value="▼"/>	Port.02	Untag <input type="button" value="▼"/>
Port.03	Untag <input type="button" value="▼"/>		

- To set the outgoing frames are VLAN-Tagged frames or untagged.

Then click .

- Tag: outgoing frames with VLAN-Tagged.
- Untag: outgoing frames without VLAN-Tagged.

- **Port VID:** Configure port VID settings

- Port VLAN ID:** enter the port VLAN ID.
- Click .
- To reset back to default value, click button.

VLAN Configuration

VLAN Operation Mode : 802.1Q

Management Vlan ID : 0

Port	Port VLAN ID
Port.01	1
Port.02	
Port.03	
Port.04	

Port	VLAN ID
Port.01	1

802.1q VLAN – Port VLAN ID interface

[NOTE] Remember to execute the “Save Configuration” action, otherwise the new configuration will lose when the switch power off.

IP Address

User can configure the IP Settings and DHCP client function, than clicks button.

- **DHCP Client: Enable or Disable** the DHCP client function. When DHCP client function is enabling, the industrial switch will be assigned the IP address from the network DHCP server. The default IP address will be replace by the DHCP server assigned IP address. After you click “Apply” button, a popup dialog show up. It is to inform the user that when the DHCP client is enabling, the current IP will lose and user

should find the new IP on the DHCP server. To cancel the enabling DHCP client function, click “cancel”.

- **IP Address:** assign the IP address that your network is using. If DHCP client function is enabling, and then you do not need to assign the IP address. And, the network DHCP server will assign the IP address for the industrial switch and display in this column. The default IP is 192.168.16.1.
- **Subnet Mask:** assign the subnet mask of the IP address. If DHCP client function is enabling, and then you do not need to assign the subnet mask.
- **Gateway:** assign the network gateway for the industrial switch. The default gateway is 192.168.16.254.

IP Configuration

DHCP Client :	<input type="button" value="Disable"/>
IP Address	192.168.16.1
Subnet Mask	255.255.255.0
Gateway	192.168.16.254

IP configuration interface

SNTP Configuration

You can configure the SNTP (Simple Network Time Protocol) settings. The SNTP allows you to synchronize switch clocks in the Internet.

1. **SNTP Client:** enable or disable SNTP function to get the time from the SNTP server.
2. **UTC Timezone:** set the switch location time zone. The following table lists the different location time zone for your reference.

Local Time Zone	Conversion from UTC	Time at 12:00 UTC
November Time Zone	- 1 hour	11am
Oscar Time Zone	-2 hours	10 am
ADT - Atlantic Daylight	-3 hours	9 am
AST - Atlantic Standard EDT - Eastern Daylight	-4 hours	8 am
EST - Eastern Standard CDT - Central Daylight	-5 hours	7 am
CST - Central Standard MDT - Mountain Daylight	-6 hours	6 am
MST - Mountain Standard PDT - Pacific Daylight	-7 hours	5 am
PST - Pacific Standard ADT - Alaskan Daylight	-8 hours	4 am
ALA - Alaskan Standard	-9 hours	3 am
HAW - Hawaiian Standard	-10 hours	2 am
Nome, Alaska	-11 hours	1 am
CET - Central European FWT - French Winter MET - Middle European MEWT - Middle European Winter SWT - Swedish Winter	+1 hour	1 pm
EET - Eastern European, USSR Zone 1	+2 hours	2 pm
BT - Baghdad, USSR	+3 hours	3 pm

Zone 2		
ZP4 - USSR Zone 3	+4 hours	4 pm
ZP5 - USSR Zone 4	+5 hours	5 pm
ZP6 - USSR Zone 5	+6 hours	6 pm
WAST - West Australian Standard	+7 hours	7 pm
CCT - China Coast, USSR Zone 7	+8 hours	8 pm
JST - Japan Standard, USSR Zone 8	+9 hours	9 pm
EAST - East Australian Standard GST Guam Standard, USSR Zone 9	+10 hours	10 pm
IDLE - International Date Line NZST - New Zealand Standard NZT - New Zealand	+12 hours	Midnight

3. **SNTP Sever IP:** set the SNTP server IP address.
4. **Switch Timer:** display the switch current time.
5. Click  button.

[NOTE] Remember to execute the “Save Configuration” action, otherwise the new configuration will lose when the switch power off.

SNTP Configuration

SNTP Client : <input type="button" value="Disable ▾"/>	
Daylight Saving Time : <input type="button" value="Disable ▾"/>	
UTC Timezone	(GMT)Greenwich Mean Time: Dublin, Edinburgh, Lisbon, London <input type="button" value="▼"/>
SNTP Server IP	<input type="text" value="0.0.0"/>
Switch Timer	<input type="text"/>
Daylight Saving Period	<input type="text" value="20040101 00:00"/> <input type="text" value="20040101 00:00"/>
Daylight Saving Offset(mins)	<input type="text" value="0"/>

SNTP Configuration

IP Security

IP security function allows you to assign 4 specific IP addresses that have permission to access the switch through the web browser for the securing switch management.

1. **Enable the IP Security:** mark the check box to enable the IP security function.
2. **Security IP 1 ~ 10:** you can assign up to 10 specific IP address. Only these 4 IP address can access and manage the switch through the Web browser.
3. Click button to apply the configuration.

[NOTE] Remember to execute the “Save Configuration” action, otherwise the new configuration will lose when the switch power off.

IP Security

Enable IP Security

Security IP1	0.0.0.0
Security IP2	0.0.0.0
Security IP3	0.0.0.0
Security IP4	0.0.0.0
Security IP5	0.0.0.0
Security IP6	0.0.0.0
Security IP7	0.0.0.0
Security IP8	0.0.0.0
Security IP9	0.0.0.0
Security IP10	0.0.0.0

Apply Help

IP Security Interface

RSTP Configuration

The Rapid Spanning Tree Protocol (RSTP) is an evolution of the Spanning Tree Protocol and provides for faster spanning tree convergence after a topology change. The system also supports STP and the system will auto detect the connected device that is running STP or RSTP protocol.

System Configuration

1. You can view spanning tree information about the Root Bridge.
2. You can modify RSTP state. After modification, click button.
 - **RSTP mode:** you must enable or disable RSTP function before configure the related parameters. (**The default value is enable**)
 - **Priority (0-61440):** a value used to identify the root bridge. The bridge with the lowest value has the highest priority and is selected

as the root. If you change the value, you must reboot the switch assign path priority number. The value must be multiple of 4096 according to the protocol standard rule.

- **Max Age (6-40):** the number of seconds a bridge waits without receiving Spanning-tree Protocol configuration messages before attempting a reconfiguration. Enter a value between 6 through 40.
- **Hello Time (1-10):** the time that controls switch sends out the BPDU packet to check RSTP current status. Enter a value between 1 through 10.
- **Forward Delay Time (4-30):** the number of seconds a port waits before changing from its Rapid Spanning-Tree Protocol learning and listening states to the forwarding state. Enter a value between 4 through 30.

[NOTE]

1. Must follow the rule to configure the MAX Age, Hello Time, and Forward Delay Time.
 $2 \times (\text{Forward Delay Time value} - 1) \geq \text{Max Age value} \geq 2 \times (\text{Hello Time value} + 1)$
2. Remember to execute the “Save Configuration” action, otherwise the new configuration will lose when the switch power off.

Rapid Spanning Tree

System Configuration		Per Port Configuration
RSTP Mode		Enable <input type="button" value="▼"/>
Priority (0-61440)		32768
Max Age (6-40)		20
Hello Time (1-10)		2
Forward Delay Time (4-30)		15

Priority must be a multiple of 4096
2¹(Forward Delay Time-1) should be greater than or equal to the Max Age.
The Max Age should be greater than or equal to 2¹(Hello Time + 1).

Root Bridge Information	
Bridge ID	800000001CF301C1
Root Priority	32768
Root Port	4
Root Path Cost	200004
Max Age	20
Hello Time	2
Forward Delay	15

RSTP– System Configuration Interface

Per Port Configuration

You can configure path cost and priority of every port.

1. Select the port in Port column.
2. **Path Cost:** The cost of the path to the other bridge from this transmitting bridge at the specified port. Enter a number 1 through 200000000.
3. **Priority:** Decide which port should be blocked by priority in LAN. Enter a number 0 through 240. The value of priority must be the multiple of 16.
4. **Admin P2P:** Some of the rapid state transactions that are possible within RSTP are dependent upon whether the port concerned can only be connected to exactly one other bridge (i.e. it is served by a point-to-point LAN segment), or can be connected to two or more bridges (i.e. it is served by a shared medium LAN segment). This function allows the P2P status of the link to be manipulated

administratively. True is P2P enabling. False is P2P disabling.

5. **Admin Edge:** The port directly connected to end stations cannot create bridging loop in the network. To configure the port as an edge port, set the port to “**True**” status.
6. **Admin Non Stp:** The port includes the STP mathematic calculation. **True** is not including STP mathematic calculation. **False** is including the STP mathematic calculation.
7. Click  button.

[NOTE] Remember to execute the “Save Configuration” action, otherwise the new configuration will lose when the switch power off.

Rapid Spanning Tree

System ConfigurationPer Port Configuration

Port	Path Cost (1-2000000000)	Priority (0-240)	Admin P2P	Admin Edge	Admin Non Stp
Port.01 Port.02 Port.03 Port.04 Port.05	200000	128	Auto	True	False

priority must be a multiple of 16

ApplyHelp

RSTP Port Status

Port	Path Cost	Port Priority	Admin P2P	Admin Edge	Stp Neighbor	State	Role
Port.01	200000	128	True	True	False	Disabled	Disabled
Port.02	200000	128	True	True	False	Disabled	Disabled
Port.03	200000	128	True	True	False	Disabled	Disabled
Port.04	200000	128	True	False	True	Forwarding	Root
Port.05	200000	128	True	True	False	Disabled	Disabled
Port.06	200000	128	True	True	False	Disabled	Disabled
Port.07	200000	128	True	True	False	Disabled	Disabled
Port.08	200000	128	True	True	False	Disabled	Disabled

RSTP – Per Port Configuration interface

X-ring

Super ring provide a faster redundant recovery than Spanning Tree topology. The action is similar with STP or RSTP, but the algorithms not the same.

In the Super ring topology, every switch should enable redundant ring function and assign two member ports in the ring. Only one switch in the redundant ring group would be set as a backup switch that one of two member ports would be blocking, called backup port, and another port is called working port. Other switches are called working switches and their two member ports are called working ports. When the network connection failure, the backup port will automatically become a working port to recovery the failure.

The switch supports one Dipswitch for configuring the switch as the ring master or slave mode. The ring master has the rights to negotiate and place command to other switches in the redundant ring group. If there are 2 or more switches are in master mode, then software will select the switch with lowest MAC address number as the ring master. The Redundant ring master ring mode will be enabling by the DIP Switch. When the switch is set to the master ring mode, the redundant ring configuration interface will display the switch as the master ring message. Also, you can identify the switch as the ring master from the R.M. LED panel of the LED panel on the switch.

X-Ring



- **Enable X-ring:** to enable the redundant ring function. Marking the check box to enable the redundant ring function.
- **1st & 2nd Working Ports:** assign two ports as the member ports. One port will be working port and one port will be the backup port. The system will automatically decide which port is working port and which port is backup port.

[NOTE]

1. When you enable the redundant ring function, you must disable the RSTP. The redundant ring function and RSTP function cannot exist at the same time.
2. Remember to execute the “Save Configuration” action, otherwise the new configuration will lose when the switch power off.

QoS Configuration

You can configure Qos setting of the every port.

- **Oos Policy:** select the Qos policy rule.
 - **Using the 8,4,2,1 weight fair queue scheme:** the switch will follow 8:4:2:1 rate to process priority queue from Hi to lowest queue. For example: the system will process 8 high queue packets, 4 middle queue packets, 2 low queue packets, and the one lowest queue packets at the same time.
 - **Use the strict priority scheme:** Always higher queue will be process first, except higher queue is empty.
- Priority Type: every port has 5 priority type selections.
 - **Port-base:** the port priority will follow the **default port priority** that you have assigned – High, middle, low, or lowest.
 - **COS only:** the port priority will only follow the **COS priority** that you have assigned.
 - **TOS only:** the port priority will only follow the **TOS priority** that

you have assigned.

- **COS first:** the port priority will follow the COS priority first, and then other priority rule.
- **TOS first:** the port priority will follow the TOS priority first, and the other priority rule.
- **COS priority:** set the COS priority level 0~7.
- **TOS priority:** the system provides 0~63 TOS priority level. Each level has 4 types of priority – high, mid, low, and lowest. The default value is “Lowest” priority for each level. When the IP packet is received, the system will check the TOS level value in the IP packet has received. For example: user set the TOS level 25 is high. The port 1 is following the TOS priority policy only. When the packet received by port 1, the system will check the TOS value of the received IP packet. If the TOS value of received IP packet is 25(priority = high), and then the packet priority will have highest priority.

[NOTE] QoS and Rate control cannot be existed at the same time.

QoS

QoS Policy

Use an 8,4,2,1 weighted fair queuing scheme

Use a strict priority scheme

Priority Type:

Port.01	Port.02	Port.03	Port.04	Port.05	Port.06	Port.07	Port.08
Port-based							

Default Port Priority:

Port.01	Port.02	Port.03	Port.04	Port.05	Port.06	Port.07	Port.08
Lowest							

[Apply](#) [Help](#)

COS

Priority	0	1	2	3	4	5	6	7
	Lowest							

[Apply](#) [Help](#)

TOS

Priority	0	1	2	3	4	5	6	7
	Lowest							
Priority	8	9	10	11	12	13	14	15
	Lowest							
Priority	16	17	18	19	20	21	22	23
	Lowest							
Priority	24	25	26	27	28	29	30	31
	Lowest							
Priority	32	33	34	35	36	37	38	39
	Lowest							
Priority	40	41	42	43	44	45	46	47
	Lowest							
Priority	48	49	50	51	52	53	54	55
	Lowest							
Priority	56	57	58	59	60	61	62	63
	Lowest							

[Apply](#) [Help](#)

QoS configuration Interface

IGMP

The Internet Group Management Protocol (IGMP) is an internal protocol of the Internet Protocol (IP) suite. IP manages multicast traffic by using switches, routers, and hosts that support IGMP. Enabling IGMP allows the ports to detect IGMP queries and report packets and manage IP multicast traffic through the switch. IGMP have three fundamental types of message as follows:

Message	Description
Query	A message sent from the querier (IGMP router or switch) asking for a response from each host belonging to the multicast group.
Report	A message sent by a host to the querier to indicate that the host wants to be or is a member of a given group indicated in the report message.
Leave Group	A message sent by a host to the querier to indicate that the host has quit to be a member of a specific multicast group.

You can enable **IGMP protocol** and **IGMP Query** function in here. You will see the IGMP snooping information in this section -- difference multicast group VID and member port, and IP multicast addresses range from 224.0.0.0 through 239.255.255.255.

[NOTE] Remember to execute the “Save Configuration” action, otherwise the new configuration will lose when the switch power off.

IGMP

IP Address	VLAN ID	Member Port
235.080.068.083	1	*****4***

IGMP Protocol:

IGMP Query :

IGMP Snooping interface

Security Manager

You can change web management login user name and password for the management security issue.

1. **User name:** type the new user name. The default is “admin”.
2. **Password:** type the new password. The default is “admin”.
3. **Confirm password:** retype the new password.
4. Click .

[NOTE] Remember to execute the “Save Configuration” action, otherwise the new configuration will lose when the switch power off.

Security Manager

User Name :	<input type="text" value="root"/>
New Password :	<input type="password" value="****"/>
Confirm Password :	<input type="password" value="****"/>
<input type="button" value="Apply"/> <input type="button" value="Help"/>	

Security Manager interface

Configuration Backup

In Configuration Backup, you can restore the backup configuration into the industrial switch. Also, you can backup the configuration to TFTP server.

TFTP Restore Configuration

You can restore flash ROM value from TFTP server, but you must put the backup image in TFTP server, industrial switch will download the image back to the flash.

1. **TFTP Server IP Address:** fill in the TFTP server IP.
2. **Restore File Name:** fill in the correct restore file name.
3. Click **Apply**.

TFTP Server IP Address	192.168.16.2
Restore File Name	data.dat

Apply **Help**

TFTP Restore Configuration interface

TFTP Backup Configuration

You can save current flash ROM value from the industrial switch to the TFTP server, then go to the TFTP restore configuration page to restore the image value back to the industrial switch.

1. **TFTP Server IP Address:** fill in the TFTP server IP
2. **Backup File Name:** fill the file name

3. Click **Apply**.

Configuration Backup

TFTP Restore Configuration **TFTP Backup Configuration**

TFTP Server IP Address	192.168.16.2
Backup File Name	data.dat

Apply **Help**

TFTP Backup Configuration interface

TFTP Update Firmware

It provides the functions to allow a user to update the switch firmware. Before updating, make sure you have your TFTP server ready and the firmware image is on the TFTP server.

- TFTP Server IP Address:** fill in your TFTP server IP.
- Firmware File Name:** the name of firmware image.
- Click **Apply**.

TFTP Update Firmware

TFTP Server IP Address	192.168.16.2
Firmware File Name	image.bin

Apply **Help**

TFTP Update Firmware interface

Factory Default

Reset Switch to default configuration. Except the IP address, subnet mask,

default gateway, username, and password will remain as user configured.

Click **Default** button to reset switch to default setting.

Factory Default

Please click **[Default]** button to restore factory default setting.

Default **Help**

Factory Default interface

System Reboot

Reboot the Switch in software reset. Click **Reboot** button to reboot the switch.

System Reboot

Please click **[Reboot]** button to restart switch device.

Reboot

System Reboot interface

Save Configuration

Save the industrial switch configuration to the flash memory. Power off the industrial switch without the saving, all changed configuration will lost. Click the **Save Flash** button the save the configuration.

Save Configuration

Save Flash

Help

Save Configuration Interface

Rate Control

You can set up every port's bandwidth rate and packet limitation type.

- **Limit Packet type:** select the packet type that want to filter. The packet types have all type packet, broadcast/multicast/unknown unicast packet, broadcast/multicast packet, and broadcast packet only. The broadcast/multicast/unknown unicast packet, broadcast/multicast packet, and broadcast packet only are only for ingress packet. The egress rate only supports all type packet.
- The port1 ~ port 8, supports port ingress and egress rate control. For example, assume port 1 is 10Mbps, users can set it's effective egress rate is 1Mbps, ingress rate is 500Kbps. The switch performs the ingress rate by packet counter to meet the specified rate.
 - **Ingress:** select the port effective ingress rate. The valid range value is 1MB, 2MB, 4MB, 8MB, 16MB, 32MB and 64MB. The default value is "disable".
 - **Egress:** select the port effective egress rate. The valid range value is 128kbps, 256Kbps, 512Kbps, 1MB, 2MB, 4MB, and 8MB. The default value is "disable".
- Click **Apply** button to apply the configuration.

[NOTE]

1. Remember to execute the "Save Configuration" action, otherwise the new configuration will lose when the switch power off.
2. Qos and Rate control cannot be existed at the same.

Rate Control

	Limit packet type	Ingress	Egress
Port.01	All	Disable ▾	Disable ▾
Port.02	All	Disable ▾	Disable ▾
Port.03	All	Disable ▾	Disable ▾
Port.04	All	Disable ▾	Disable ▾
Port.05	All	Disable ▾	Disable ▾
Port.06	All	Disable ▾	Disable ▾
Port.07	All	Disable ▾	Disable ▾
Port.08	All	Disable ▾	Disable ▾

Apply | Help

Rate Control Interface

Troubles shooting

- Verify that you are using the right power cord/adapter (DC 12-48V), please don't use the power adapter with DC output bigger than 48V, or it will burn this switch down.
- Select the proper UTP cable to construct your network. Please check that you are using the right cable. use unshielded twisted-pair (UTP) or shield twisted-pair (STP) cable for RJ-45 connections: 100Ω Category 3, 4 or 5 cable for 10Mbps connections or 100Ω Category 5 cable for 100Mbps connections. Also be sure that the length of any twisted-pair connection does not exceed 100 meters (328 feet).
- **Diagnosing LED Indicators:** the Switch can be easily monitored through panel indicators to assist in identifying problems, which describes common problems you may encounter and where you can find possible solutions.
- IF the power indicator does turn on when the power cord is plugged in, you may have a problem with power cord. Than check for loose power connections, power losses or surges at power outlet. IF you still cannot resolve the problem, contact your local dealer for assistance.
- If the Industrial switch LED indicators are normal and the connected cables are correct but the packets still cannot transmit. Please check your system's Ethernet devices' configuration or status.

Technical Specification

The 8 10/100TX with Super ring Web management industrial switch technical specification is following.

Standard	<ul style="list-style-type: none">■ IEEE 802.3 10Base-T Ethernet■ IEEE 802.3u 100Base-TX Fast Ethernet■ IEEE802.3x Flow Control and Back-pressure■ IEEE802.1d spanning tree / IEEE802.1w rapid spanning tree■ IEEE802.1p class of service■ IEEE802.1Q VLAN Tag
Protocol	CSMA/CD
Management	Provides Web interface management and one default button for system default setting
Technology	Store and forward switching architecture
Transfer Rate	14,880 pps for Ethernet port and 148,800 pps for Fast Ethernet port
Transfer packet size	64bytes to 1522 bytes (with VLAN tag)
MAC address	2K MAC address table
Memory Buffer	1Mbits
Back-plane	2.0 Gbps

Packet throughput ability	1.19Mpps @64bytes (8TX)
LED	<ul style="list-style-type: none"> ■ Per port: Link/Activity (Green), Full duplex/Collision (Yellow) ■ Per unit: Power (Green), Power 1 (Green), Power 2 (Green), Fault (Yellow), Master (Green)
Network Cable	<p>10Base-T: 2-pair UTP/STP Cat. 3, 4, 5 cable EIA/TIA-568 100-ohm (100m)</p> <p>100Base-TX: 2-pair UTP/STP Cat. 5 cable EIA/TIA-568 100-ohm (100m)</p>
Power Supply	12 ~48 VDC, Redundant power with polarity reverse protect function and connective removable terminal block for master and slave power.
Power consumption	4.6 Watts
Packet filter	<p>4 selection rules for different type of packet combination:</p> <ul style="list-style-type: none"> ■ All of packet ■ Broadcast/ multicast/ unknown unicast packet ■ Broadcast/ multicast packet ■ Broadcast packet only
Class of service	IEEE802.1p class of service support, per port provides 4 priority queues.
Quality of service	The quality of service support port based, Tag based and IPv4 Type of service.

Super ring	2 ports for Super ring to provide redundant backup feature and the recovery time below 300ms. It also supports coupling ring function. Ring and coupling port configure by web interface and ringmaster by hardware DIPswitch.
VLAN	Support Port based VLAN and IEEE802.1Q Tag VLAN. Both of port based and Tag based VLAN group up to 64 VLANs.
Spanning tree	IEEE802.1d spanning tree and IEEE802.1w rapid spanning tree.
IGMP	Support IGMP v1 and Query mode. Up to 256 groups.
SNTP	Support Simple Network time protocol
Management IP security	Support IP address security to prevents unauthorized intruder.
Port mirror	Support TX packet only or both of TX and RX packet.
Install	Provide DIN rail kit and wall mount ear for wall mount or DIN-type cabinet install.
Alarm	Provides one relay output for port breakdown, power fail and provide Dipswitch to mask link down port. Alarm Relay current carry ability: 1A @ DC24V
Firmware update	Support TFTP firmware update, TFTP configuration backup and restore.

DHCP client	Provide DHCP client function to obtain IP address from DHCP serve.
Bandwidth control	<ul style="list-style-type: none"> ■ Support ingress packet filter and egress packet limit. ■ The egress rate control supports all of packet type and the limit rates are 128kbps, 256Kbps, 512Kbps, 1MB, 2MB, 4MB, and 8MB. ■ Ingress filter packet type combination rules are Broadcast/Multicast/Unknown Unicast packet, Broadcast/Multicast packet, Broadcast packet only and all of packet. The packet filter rate can be set follow as:1Mbps、2Mbps、4Mbps、8Mbps、16Mbps、32Mbps、64Mbps.
Operation Temp.	0°C to 60°C (32°F to 140°F)
Operation Humidity	5% to 95% (Non-condensing)
Storage Temperature	-40°C to 85°C
Case Dimension	IP-30, 54 mm (W) x 135 mm (H) x 105mm (D)
EMI	FCC Class A, CE EN6100-4-2, CE EN6100-4-3, CE EN-6100-4-4, CE EN6100-4-5, CE EN6100-4-6
Safety	UL, cUL, CE/EN60950
Stability testing	IEC60068-2-32 (Free fall), IEC60068-2-27 (Shock), IEC60068-2-6 (Vibration)